J. S. THOMPSON.
METAL CASTING MACHINE.
APPLICATION FILED AUG. 11, 1917.

1,291,259. Patented Jan. 14, 1919.

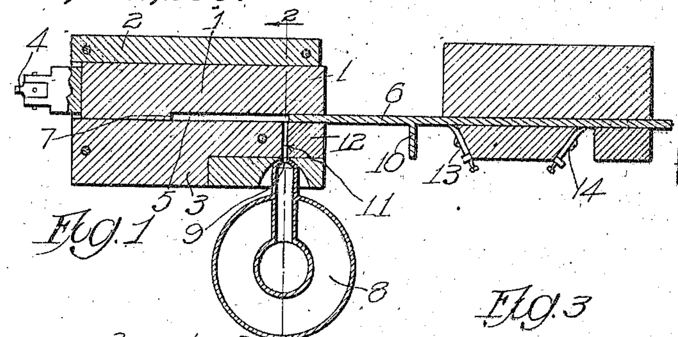


Fig. 1

Fig. 2

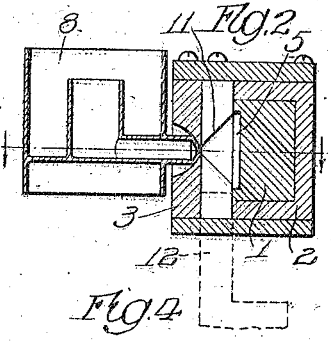


Fig. 3

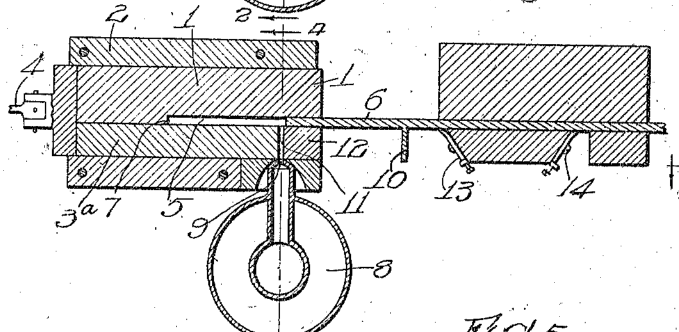


Fig. 4

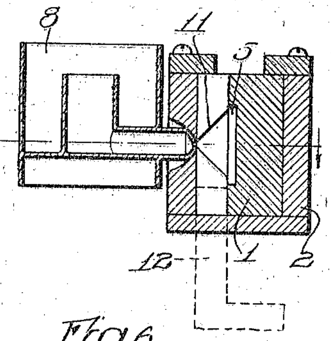


Fig. 5

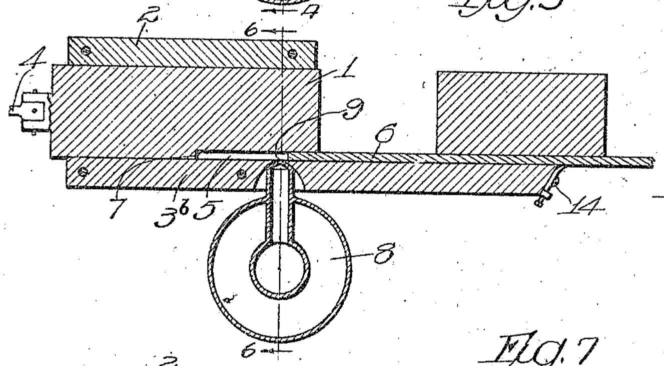


Fig. 6

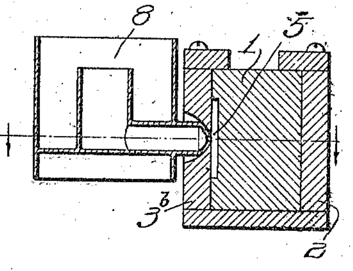


Fig. 7

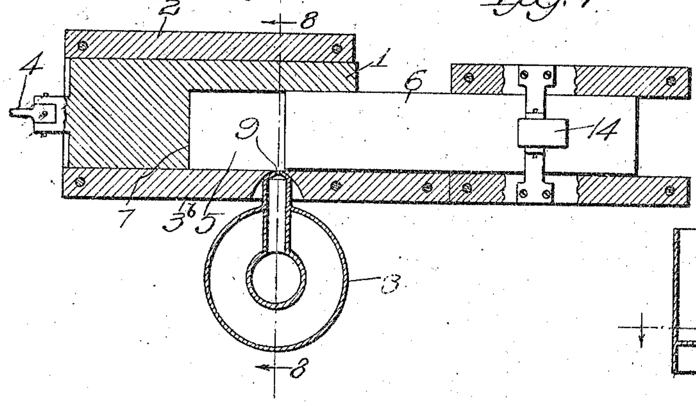
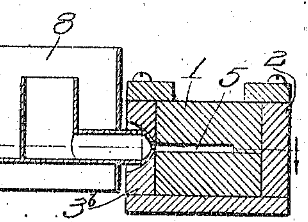


Fig. 8



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UNITED STATES PATENT OFFICE.

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METAL-CASTING MACHINE.

1,291,259. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed August 11, 1917. Serial No. 185,737.

To all whom it may concern:

Be it known that I, JOHN S. THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Metal-Casting Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to metal-casting machines, and has to do more particularly with so-called type-casting machines which will produce, by means of a series of separate castings fused together, continuous strips of material for use in the printing art, such, for instance, as leads, rules, and the like. These rules, leads, etc., are usually thin, ribbon-like structures, being cast in various thicknesses, sometimes as thin as .028 of an inch. Hitherto, in molding machines of this kind a reciprocatory ejector blade has been provided for ejecting the sections of the cast strip so as to clear the mold-cavity for the next injection of molten metal. A moving ejector of this character is objectionable, whether thin or otherwise, and is particularly objectionable where thin strips of lead, .028 of an inch, are cast. Such an ejector blade must have a very snug fit to begin with, and its fit must be so maintained in order to prevent the molten metal from running in between the ejector blade and the surrounding supports in which it slides.

One of the objects of my invention is to obviate the use of the ejector blade, and instead I provide a mold-block having a mold-cavity, movable across the face of the molten metal inlet, the transverse cross-section of which is preferably the same as the transverse cross-section of the strip, and so shaped that an edge of the mold-cavity advances the last section of the strip upon each reciprocation of the mold-block, means being provided to hold the strip during the return movement of the mold-block to clear the mold-cavity for the next injection of molten metal. Thus, the mold-block itself, together with the strip-holding means, acts to advance the strip as it is being formed, and the use of the reciprocatory ejector-blade is eliminated.

For a better understanding of my invention, reference will be made to the accompanying drawings, in which various modifications of my invention are shown and in which—

Figure 1 is a longitudinal transverse section of one form of my invention;

Fig. 2 is a transverse section along the line 2—2 of Fig. 1;

Fig. 3 is another form of my invention;

Fig. 4 is a transverse section along the line 4—4 of Fig. 3;

Fig. 5 is another form of my invention;

Fig. 6 is a transverse section along the line 6—6 of Fig. 5;

Fig. 7 is still another form of my invention; and

Fig. 8 is a transverse section along the line 8—8 of Fig. 7.

Referring now more particularly to the form of my invention as shown in Figs. 1 and 2, it comprises a mold-block 1 supported between guides 2 and 3, there being relative reciprocatory movement between the mold-block and the guides, preferably by moving the mold-block 1. For this purpose any well-known mechanism may be used, and I show a crank-shaft 4 pivotally connected to the mold-block 1 and adapted to be connected to a bell-crank of some sort so as to reciprocate the mold-block 1. A box-like mold-cavity 5 is provided in the mold-block 1, the transverse cross-section of which is preferably the same as the transverse cross-section of the strip 6 which is being cast. This cavity 5 is open at its outer end and is provided with an inner edge 7, this inner edge acting to advance the strip as the mold-block is reciprocated. To prevent the strip 6 from returning upon each return movement of the mold-block 1, I provide a stripper 14 in the shape of a spring-finger or yieldingly-held check-pawl.

For the purpose of feeding the molten metal, I provide a metal pot 8 of any well-known construction, and for this purpose a pot may be used such as is shown in my Patent No. 1,029,243 of June 11, 1912, entitled "Metal pot for type-casting machines, and the like". The metal pot shown in this patent is so arranged that the small metal feeding-port 9 therein is automatically opened and closed to allow the molten metal to fill the cavity 5 and the jet 11, where such a jet is used. This construction is well known and therefore I will not attempt to describe in detail the operation thereof.

In the form of my invention shown in Figs. 1 and 2, the block 3 is provided with a jet-opening 11 which increases to the width of the cavity 5 as shown in Fig. 2. The member 12, which acts as a wall for one side of the jet-opening 11, has a vertical reciprocatory movement so as to permit the jet 10 to be advanced with the strip 6. This member 12 is, of course, moved out of the way just before the mold-block 1 starts to advance. This construction is also well known and therefore I will not describe herein any particular mechanism required for this purpose, but will simply state that it is only necessary that the portion 12 be dropped out of the way of the jet 10 before the strip 6 is advanced, and after the last-cast portion of the strip 6 has been advanced and before the next portion of molten metal is injected, the block 12 is again moved upwardly into place. A suitable arrangement for performing this operation is shown in a pending application Serial No. 128,342, for casting machines.

In Fig. 2, which is a transverse section along the line 2—2 of Fig. 1, the jet-opening 11 is shown in the side of the block 3, the jet-opening being so shaped as to permit a ready flow of molten metal to the mold-cavity 5. The movable member 12 is shown in dotted lines in this figure, the view being taken along line 2—2, which is back of the block 12.

Each reciprocation of the mold-block 1 brings the edge 7 of the mold-cavity 5 practically on a line with the right-hand edge of the jet-opening 11 (Fig. 1) so that upon the next injection of molten metal the metal will fuse with the congealed section of the strip 6 which has been advanced. Thus, by the holding action of the stripper 14 and the continued reciprocation of the mold-block itself, an intermittent advance of the strip 6 is effected, which may be made continuous and cut off in desired lengths.

As the strip 6 is advanced the jets 10 are cut off by means of a knife 13 so that the side of the strip will present a smooth surface.

In describing and illustrating my invention I have referred to a ribbon-like strip as being cast, but it will be apparent that my invention may be employed in making strips of transverse cross-section other than ribbon-like.

Figs. 3 and 4.

In Figs. 3 and 4 another form of my invention is shown, in which the jet-opening carrying-block 3^a is movable with and thus forms part of the mold-block 1, instead of being stationary as in Fig. 1. The member 12, however, is vertically movable so as to allow the jets 10 to be advanced with the strip 6.

It is thought the operation of the form shown in Figs. 3 and 4 will be readily understood in view of the description of Figs. 1 and 2.

Figs. 5 and 6.

In Figs. 5 and 6 another modified form of my invention is shown, in which the nozzle of the metal pot 8 is positioned close to the mold-cavity in the mold-block 1, so that a continuous strip 6 is formed without any projecting jets 10. In this case the stationary block 3^b also acts as a guide for the mold-block 1, which is adapted to be reciprocated as in the forms already described. In this form the metal feeding-port 9 is placed so that the metal is fed directly to the mold-cavity without the intervention of a jet-opening. As the strip 6 is advanced the stripper or pawl 14 prevents the return movement thereof.

Figs. 7 and 8.

In the form shown in Figs. 7 and 8 the strip 6 is cast lying in a horizontal position, as distinguishing from the vertical position of the forms already described. In the present form the molten metal is injected from an edge side of the strip. The nozzle of the metal pot is also preferably positioned immediately adjacent the edge of the strip, so that no projecting jet is cast.

It is thought the operation of the form shown in Figs. 7 and 8 will be apparent in view of the description already given of the other forms.

For the purpose of illustrating my invention, I have shown a mold for casting strips of ribbon-like structure, but it will be apparent that my invention is not by any means limited to this shape of strip, and that the cross-sectional shape may be varied and determined by the shape of the cavity in the mold-block. I also aim to apply my invention in other ways than that shown, and appreciate that many changes and modifications will readily occur to those skilled in the art, and therefore I do not desire to be limited to the structure shown and described, but aim to cover all that which comes within the spirit and scope of the appended claims.

I claim as new and desire to secure by Letters Patent of the United States:

1. A machine for casting strips of metal comprising a metal feeding-inlet, a mold-block having a mold-cavity arranged to have a portion of the strip casting always remain therein movable across the face of the inlet, means for imparting relative reciprocatory movement to the inlet and mold-block, said mold cavity being shaped to advance the strip upon each reciprocation, and means for holding the strip during the return movement of reciprocation to clear the cavity.

2. A machine for casting strips of metal comprising a metal feeding-inlet, a mold-block having a mold-cavity movable across the face of the inlet, means for reciprocating the mold-block, a stripper or check-pawl, the reciprocation of the mold-block being adapted to cause an intermittent advance of the strip.

3. A machine for casting strips of metal comprising a metal feeding-inlet, a mold-block having a box-like mold-cavity, means for reciprocating the mold-block to advance the mold-cavity beyond the inlet to clear the inlet upon each reciprocation and a stripper or check-pawl for holding the strip against reciprocation.

4. A machine for casting strips of metal comprising a metal feeding-inlet, a mold-block having a mold-cavity movable transversely of the face of the inlet, a stripper or check-pawl, and means for reciprocating the mold-block whereby an edge of the mold-cavity effects an intermittent advance of the strip.

5. A machine for casting strips of metal comprising a metal feeding-inlet, a reciprocatory mold-block having a mold-cavity movable across the face of the inlet, means whereby upon each reciprocation of the mold-block the metal in the mold is advanced to clear the cavity and means engaging and holding the strip against retraction.

6. A machine for casting strips of metal comprising a block having a jet-opening, a mold-block having a mold-cavity movable across the face of the jet-opening, means for feeding molten metal to the jet-opening, means for imparting relative reciprocatory movement to the blocks, said mold-cavity being shaped to advance the strip upon each reciprocation, and gripping means for holding the strip during the return movement of the mold-block to clear the cavity.

7. A machine for casting strips of metal comprising a block having a jet-opening, a mold-block having a mold-cavity in cross-section similar to the transverse cross-section of the strip and movable across the face of the jet-opening, means for feeding molten metal to the jet-opening, means for imparting a relative reciprocatory movement to the blocks whereby upon each reciprocation the metal in the mold-cavity is advanced to clear the cavity, and gripping means for holding the strip during the return movement of the mold-block.

8. A machine for casting strips of metal comprising a block having a jet-opening, a reciprocatory mold-block having a mold-cavity movable across the face of the jet-opening, and means whereby upon each reciprocation of the mold the metal therein is advanced to clear the mold-cavity and leave the strip in position to be fused by the next cast.

9. A machine for casting strips of metal comprising a block having a jet-opening, a reciprocatory mold-block having a mold-cavity in one side in cross-section similar to the transverse cross-section of the strip and movable across the face of the jet-opening, means for feeding molten metal to the jet-opening, and means whereby upon each reciprocation of the mold the metal therein is advanced to clear the mold cavity and leave the strip in position to be fused by the next cast.

10. A machine for casting strips of metal comprising a block having a jet-outlet in one face thereof, a mold-block having a mold-cavity extending back from a face of the mold-block movable against the face of the block, means for feeding molten metal to the jet-outlet, and means for imparting a reciprocatory movement to the mold-block so as to move the mold-cavity across the jet-outlet whereby an edge of the mold-cavity acts to advance the strip upon each reciprocation, and means for holding the strip in its advanced position to be fused by the next cast.

11. A machine for casting strips of metal comprising a block having a metal feeding-outlet, a reciprocatory mold-block having a mold-cavity movable transverse of the outlet, there being a passage connecting the mold-cavity and outlet, and means whereby upon each reciprocation of the mold-block the metal in the mold is advanced to clear the cavity.

In witness whereof I have hereunto subscribed my name.

JOHN S. THOMPSON.